BRIEF DESCRIPTION OF THE DRAWINGS

[0012] Embodiments of the present invention are illustrated by way of example, and not by way of limitation, in the figures of the accompanying drawings and in which like reference numerals refer to similar elements.

[0013] FIG. **1** is a block diagram of an example of a client-side computing system or a destination-side computing system, e.g., a server in accordance with embodiments of the present invention.

[0014] FIG. **2** is a block diagram of an example of a communication network architecture in which servers and client systems may be coupled to a network, according to embodiments of the present invention.

[0015] FIG. **3** is an illustration of the IPv6 header format.

[0016] FIG. **4**A illustrates the IPv6 extension header format.

[0017] FIG. **4**B illustrates the format of the options field of a Destination Options header.

[0018] FIG. **5** illustrates an exemplary format for an IPv6 extension header data with geo-location information in accordance with an embodiment of the present invention.

[0019] FIG. **6** illustrates an exemplary configuration of a network using extension headers in IPv6 packets to transmit geo-location information in accordance with an embodiment of the invention.

[0020] FIG. **7** depicts a flowchart for an exemplary computer controlled process for managing Internet traffic based on geo-location information in an IPv6 packet in accordance with embodiments of the present invention.

[0021] FIG. **8** depicts a flowchart for an exemplary computer controlled process for authenticating an IPv6 packet based on geo-location information in the packet in accordance with embodiments of the present invention.

[0022] FIG. **9** depicts a flowchart for an exemplary computer controlled process for prioritizing an IPv6 packet based on geo-location information in the packet in accordance with embodiments of the present invention.

[0023] FIG. **10** depicts a flowchart for an exemplary computer controlled process for efficiently routing an IPv6 packet based on geo-location information in the packet in accordance with embodiments of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0024] Reference will now be made in detail to the various embodiments of the present disclosure, examples of which are illustrated in the accompanying drawings. While described in conjunction with these embodiments, it will be understood that they are not intended to limit the disclosure to these embodiments. On the contrary, the disclosure is intended to cover alternatives, modifications and equivalents, which may be included within the spirit and scope of the disclosure as defined by the appended claims. Furthermore, in the following detailed description of the present disclosure, numerous specific details are set forth in order to provide a thorough understanding of the present disclosure. However, it will be understood that the present disclosure may be practiced without these specific details. In other instances, well-known methods, procedures, components, and circuits have not been described in detail so as not to unnecessarily obscure aspects of the present disclosure.

NOTATION AND NOMENCLATURE

[0025] Some portions of the detailed descriptions that follow are presented in terms of procedures, logic blocks, processing, and other symbolic representations of operations on data bits within a computer memory. These descriptions and representations are the means used by those skilled in the data processing arts to most effectively convey the substance of their work to others skilled in the art. In the present application, a procedure, logic block, process, or the like, is conceived to be a self-consistent sequence of steps or instructions leading to a desired result. The steps are those utilizing physical manipulations of physical quantities. Usually, although not necessarily, these quantities take the form of electrical or magnetic signals capable of being stored, transferred, combined, compared, and otherwise manipulated in a computer system. It has proven convenient at times, principally for reasons of common usage, to refer to these signals as transactions, bits, values, elements, symbols, characters, samples, pixels, or the like.

[0026] It should be borne in mind, however, that all of these and similar terms are to be associated with the appropriate physical quantities and are merely convenient labels applied to these quantities. Unless specifically stated otherwise as apparent from the following discussions, it is appreciated that throughout the present disclosure, discussions utilizing terms such as "authenticating," "prioritizing," "routing," "constructing," "inserting," "determining," "receiving," "inserting," "transmitting," "determining," or the like, refer to actions and processes (e.g., flowchart **700** of FIG. **7**) of a computer system or similar electronic computing device or processor (e.g., system **110** of FIG. **1**). The computer system or similar electronic computing device manipulates and transforms data represented as physical (electronic) quantities within the computer system memories, registers or other such information storage, transmission or display devices.

[0027] Embodiments described herein may be discussed in the general context of computer-executable instructions residing on some form of computer-readable storage medium, such as program modules, executed by one or more computers or other devices. By way of example, and not limitation, computer-readable storage media may comprise non-transitory computer-readable storage media and communication media; non-transitory computer-readable media include all computer-readable media except for a transitory, propagating signal. Generally, program modules include routines, programs, objects, components, data structures, etc., that perform particular tasks or implement particular abstract data types. The functionality of the program modules may be combined or distributed as desired in various embodiments.

[0028] Computer storage media includes volatile and non-volatile, removable and non-removable media implemented in any method or technology for storage of information such as computer-readable instructions, data structures, program modules or other data. Computer storage media includes, but is not limited to, random access memory (RAM), read only memory (ROM), electrically erasable programmable ROM (EEPROM), flash memory or other memory technology, compact disk ROM (CD-ROM), digital versatile disks (DVDs) or other optical storage, magnetic cassettes, magnetic tape, magnetic disk storage or other magnetic storage devices, or any other medium that can be used to store the desired information and that can accessed to retrieve that information.